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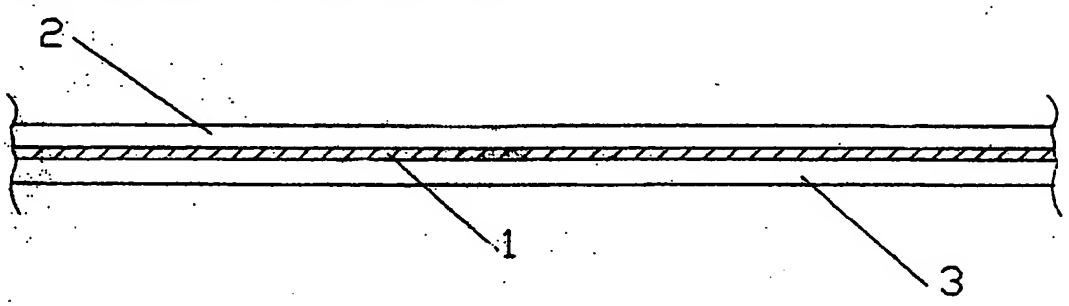
(54) Multilayer insole for providing transpiring, smell preventing inner-soles to be fitted into shoes

(57) A multilayer insole in which an intermediate layer is provided, made of a material permitting the free passage of vapour but blocking liquids, such as for example Gore-Tex®, fitted between at least made of a first soft and permeable non absorbing material touching the foot, and at least a second layer holding and retaining the moisture produced by transpiration condensation, said second layer being made of latex foam preferably enriched with activated charcoal and/or suitable antibacterial compounds.



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Description

The present invention provides a multilayer insole comprising a layer made of a material opposing the passage of liquids though permitting the passage of water vapour, said material being comprised between at least a felt layer and a latex foam layer.

The insole is provided for the realisation, in particular, of arch-supports or the like to be fitted into shoes, in order to avoid the drawbacks which may result from foot perspiration in consequence of the prolonged use of the shoe.

In particular, this intermediate layer will be made of a material, such as GORE-TEX (registered trademark), which is impermeable, in that it does not allow the passage of liquids, but it allows free transpiration and the passage of vapour at least in one direction.

This material will be joined to the outward layers by means of glue dots or proper quilting, in order to provide an insole which can prevent or delay the formation of fungi or odours and the stagnation of liquids in contact with the foot, and which is cheap and easy to manufacture.

As known, the problem of foot perspiration is felt by several people, since the sweat and moisture which form as a result of transpiration are often eliminated with difficulty, with several drawbacks such as the formation of fungi and odours inside the shoe, the faster wear of said shoe, as well as possible epidermis damages due to maceration. In any case, the whole of this causes a generally uncomfortable situation for people.

This problem has sharpened in the last few years, as a result of the wider and wider spread of shoes which are made both with natural or synthetic materials, and with hides which, for the treatments they go through in the course of working, are less fit for permitting good foot transpiration.

It has been tried to remedy these problems by using suitable arch-supports which are fitted into the shoe and periodically replaced.

The use of replaceable insoles inside shoes is already known.

For example, felt insoles or the like are commonly used which are fitted into shoes both when shoes are slightly large, to better fit them to the size of the foot, and because felt is a sufficiently deformable material which permits the foot, even when the shoe is new, to make a properly shaped seat for itself, so as to make the shoe more comfortable.

In order to remedy the drawbacks due to excessive foot perspiration, insoles of this kind have been used which are made of a suitable material, such as for example latex foam, to which, if necessary, activated charcoal and/or other suitable substances have been added, which can absorb the odours and the sweat produced by the foot.

These insoles, the top and bottom of which are coated with a fabric layer, are fitted into the shoe and they act both as a filler and as a material absorbing sweat and delaying the formation of bad smells.

However, the solution known in the art is not wholly satisfying, as even these insoles, especially in case of abundant perspiration or prolonged and continuous use of the shoe, since they cannot eliminate absorbed moisture, become impregnated in a more or less short time, thus becoming practically unusable.

Therefore, a solution is still being sought to the problem caused by excessive foot perspiration and, for this purpose, the present invention provides a multilayer insole for the realisation of transpiring, smell preventing arch-supports to be fitted into shoes, characterised in that it uses a material such as GORE-TEX®, actually patented and produced by the applicant of the present invention, being fitted between at least a layer of a soft material such as, for example, felt, and a layer, for example, of latex foam enriched with activated charcoal.

Said material forming the intermediate layer, which permits free foot transpiration, in that it does not oppose the passage of vapour, but stops the return of humidity, is already known in the art, but it is used in different fields for the realisation of coats, sports jackets and the like.

The present invention will now be described in detail, by way of example, with reference to the only accompanying drawing, which shows a sectional view of an insole according to the invention.

With reference to said figure, the insole comprises at least three laminar layers, of which the intermediate layer, being shown by reference number 1, is made of a material which can block liquids, but which permits transpiration and the passage of vapour, specifically a layer of a material such as GORE-TEX®.

This intermediate layer, combined, if necessary, with a fine mesh of fabric or non-woven fabric, in order to make it easier to be handled, is fitted between an upper layer 2 made of felt, for example polypropylene felt, non absorbing, and a lower layer 3, for example of latex foam, preferably enriched with activated charcoal and antibacterial and/or anti-fungus compounds having a deodorising effect.

Layers 1, 2 and 3 are connected by means of a discrete number of glue dots, suitably spaced to provide good adhesion among the different materials, permitting however free foot transpiration and, consequently, the free passage of vapour. The different layers may also be connected by proper quilting.

The insole may be produced from continuous strips forming the three layers, which are glued or quilted together to provide a rolll from which the arch-supports may then be obtained, for example by die-cutting or any other known method.

The arch-supports obtained in such a way are fitted into the shoe, thus providing the foot several beneficial and comfort functions, comprising a filling effect, with better support of the arch of the foot, as well as a sense of heat and dryness in winter, permitting especially the vapour produced by transpiration to pass through felt 2, without thus causing condensation, then letting vapour

reach layer 1, of a material which is permeable to water vapour (GORE-TEX®).

Then vapour reaches lower layer 3, made of latex foam or any other suitable material, where liquid condensation occurs, not being possible for said liquid to come into contact with the foot again, since layer 1 is impermeable to water.

This way the foot may keep dry for a rather long period, while the activated charcoal and the antibacterial and anti-fungus compounds enriching layer 3, for example of latex foam, avoid the formation of bad smells and ensure the insole hygiene.

At the end of the day, said insole may be taken out of the shoe, if necessary, and let dry, in order to be used again.

Said insole may also be washed, if the need arises.

An insole is thus provided which combines the comfort advantages of insoles known in the art and the valuable characteristic of permitting good foot transpiration, thus avoiding that moisture, which condenses inside the shoe, is trapped in the layer touching the foot, which would cause a sense of discomfort.

Of course the dimensions, as well as the materials used for the outward layers, and their number may change according to the requirements of use.

Claims

1. A multilayer insole for the realisation of transpiring arch-supports, to be fitted into shoes, characterised in that it comprises an intermediate layer made of a material which permits the free passage of vapour but blocks liquids, said intermediate layer being fitted between at least a layer made of a soft and permeable non absorbing material touching the foot, and at least a layer holding and retaining the moisture produced by transpiration condensation.

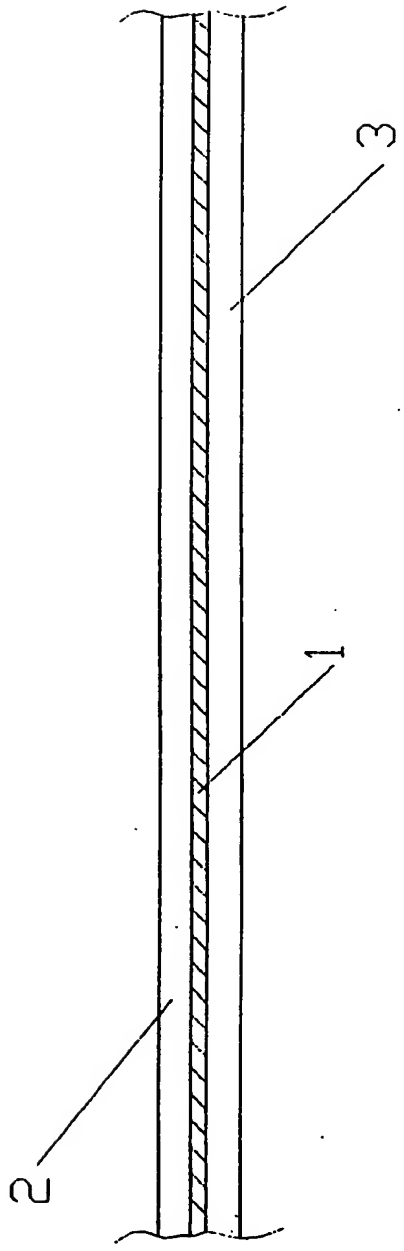
2. The multilayer insole of claim 1, characterised in that said intermediate layer is made of a material such as GORE-TEX®.

3. The multilayer insole of any one of the preceding claims, characterised in that the outward layer touching the foot is made of felt or any other suitable material and the lower outward layer is made of latex foam or other suitable material.

4. The multilayer insole of any one of the preceding claims, characterised in that said lower outward layer is enriched with activated charcoal and/or suitable antibacterial compounds.

5. The multilayer insole of any one of the proceeding claims, characterised in that said layers are connected by means of discrete glue dots or proper quilting.

6. A multilayer insole for the realisation of transpiring arch-supports, as described and illustrated.



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EUROPEAN SEARCH REPORT

Application Number
EP 95 11 8037

DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
X	FR-A-2 612 053 (STANISLAS GRAIRIE) * the whole document * & FR-A-2 607 679	1,5,6	A43B13/38 A43B7/06 A43B7/12
X	WO-A-93 16612 (W.L. GORE & ASSOCIATES (UK) LTD.) * abstract * * page 1, line 1 - line 10 * * page 2, line 23 - line 25 * * page 3, line 25 - page 4, line 8 * * page 6, line 2 - line 15 * * claims 1,4-6; figure 1 *	1,2,5,6	
A	US-A-4 819 345 (JOHN J. MULCAHY AND I. DAVID HILL) * the whole document *	1,6	
A	EP-A-0 350 611 (W.L. GORE & ASSOCIATES GMBH) * the whole document *	1,2	
A	DE-A-39 04 974 (HACKNER JUN.) * the whole document *	1,2	TECHNICAL FIELDS SEARCHED (Int.Cl.6) A43B B32B D06N
A	DE-A-40 02 667 (JOHANN AUMANN) * the whole document *	1	
A	DE-A-36 28 913 (JOSEF LEDERER) * the whole document *	1,2	
A	US-A-4 967 494 (JAMES J. JOHNSON) * the whole document *	1,2	
A	EP-A-0 619 959 (POL SCARPE SPORTIVE S.R.L.) * the whole document *	1	

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The present search report has been drawn up for all claims

Place of search	Date of completion of the search	Examiner
THE HAGUE	23 February 1996	Molto Pinol, F

CATEGORY OF CITED DOCUMENTS

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DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int.Cl.6)
A	EP-A-0 555 975 (OGDEN INC.) * abstract * * column 6, line 14 - line 16 * * claims 1,8,9,16,18 * ---	4	
A	DATABASE WPI Section Ch, Week 8915 Derwent Publications Ltd., London, GB; Class ADF, AN 89-110364 (15) & JP-A-01 056 004 (DAICEL CHEM. IND. K.K.) , 2 March 1989 * abstract * ---	3,4	
A	DATABASE WPI Section Ch, Week 8144 Derwent Publications Ltd., London, GB; Class ACD, AN 81-80638D (44) & JP-A-56 118 712 (IZAWA G.) , 17 September 1981 * abstract * ---	3,4	
A	EP-A-0 479 183 (POL SCARPE SPORTIVE S.R.L.) * abstract * * column 2, line 3 - line 7 * * claims 1,9 * ---	2	TECHNICAL FIELDS SEARCHED (Int.Cl.6)
A	EP-A-0 283 200 (EXXON CHEMICAL PATENTS INC.) * abstract * * page 4, line 39 - line 54 * * page 6, line 31 - line 39 * -----	1	

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